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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,962

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Alexander Cioc

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EXAMINER

HIGGINS, GERARD T

ART UNIT

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1794

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,962	<b>Applicant(s)</b> CIOC ET AL.	
	<b>Examiner</b> GERARD T. HIGGINS	<b>Art Unit</b> 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/19/2005 and 08/07/2006</u> .                               | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

2. The drawings are objected to because the interface between the polymer disk and the sensitive glass of Figure 1 is incomplete. Additionally, the reflective layer appears to be within the polymer disk at certain places. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The disclosure is objected to because of the following informalities:
  - a. Applicants continue to refer to doping the metallic ions either "on" or "in" the dielectric storage material. It is highly confusing as to if and how far the metal ions are traveling into the storage medium.
  - b. The paragraph on page 6, lines 1-3 is awkward. Additionally, what type of electromagnetic radiation is "substance"?
  - c. There is no Brief Description of the Drawings section.Appropriate correction is required.

4. The abstract of the disclosure is objected to because it is over 150 words.  
Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The

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disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### ***Claim Objections***

5. Claims 7, 9-11, and 15-17 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. With regard to claims 7 and 9-11, the claims refer to "*the* material layer;" however, there is no mention of "*the* material layer" in claim 1. With regard to claims 15-17, the claims refer to the process of claim 1; however, claim 1 is clearly an article.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The indefinite claim language includes the usage of "and/or" in claims 2, 13, 14, and 16, the usage of "metallic particles/metallic ions" in claim 12, the word "reflexion" in claim 14, and all of the broad/narrow limitations mentioned below. Particularly, the use of a solidus confuses these claims sufficiently to raise the question of which word

applicants are intending to use “and” or “or.” For example in claim 2, do applicants wish to have “metallic particles and aggregations” or “metallic particles or aggregations”?

With regard to claim 1, applicants claim that a donor layer “may be arranged” and that the ions in said donor layer “may be transferred.” This is indefinite as it is unclear whether applicants do or do not need a donor layer for their article; furthermore, the doping of ions into the glass layer appears to be necessary for this article to function properly.

With regard to claim 13, it appears that this is not a process for recording or reproducing of data. This appears to be a process for the production of a storage medium as the doping of ions into the glass only creates the storage layer and does not consist of encoded data.

The terms “local metallic ion doping”, “locally with metallic ions”, and “near the surface” in claims 2, 14, and 4, respectively, are relative terms which render the claims indefinite. The terms “local metallic ion doping”, “locally with metallic ions”, and “near the surface” are not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Applicants are seemingly trying to claim a local doping or deposition of metallic ions; however, they provide no examples or numbers with regard to what the terms “local” or “near” mean.

Usage of the term “notably” in claims 1, 2, 13, and 18 renders these claims indefinite as it is unclear whether applicants seek to include the limitation following the word notably.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation "irradiation of the storage medium", and the claim also recites "in particular with a laser beam" which is the narrower statement of the range/limitation.

Claim 6 recites the broad recitation "a layer of material", and the claim also recites "particularly polymer" which is the narrower statement of the range/limitation.

Claim 7 recites the broad recitation "optically functional structure", and the claim also recites "in particular information for the guidance of a read/write beam" which is the narrower statement of the range/limitation.

Claim 11 recites the broad recitation "features a reflective layer", and the claim also recites "arranged in particular on the material layer, preferably between the

material layer and the storage material” which is the narrower statement of the range/limitation.

Claim 13 recites the broad recitation “electromagnetic and/or particle radiation”, and the claim also recites “particularly by means of a laser beam” which is the narrower statement of the range/limitation.

Claim 14 recites the broad recitation “electromagnetic and/or particle radiation”, and the claim also recites “by means of a laser beam” which is the narrower statement of the range/limitation. Laser beams are an electromagnetic form of radiation.

Claim 15 recites the broad recitation “in the visible region”, and the claim also recites “notably in the blue wavelength region” which is the narrower statement of the range/limitation.

Claim 16 recites the broad recitation “resonance-enhanced absorption of radiation”, and the claim also recites “notably by reason of surface plasmon resonance” which is the narrower statement of the range/limitation.

For the purposes of examination, the Examiner will treat all of these indefinite statements using the broader definition.

Claims 7 and 9-11 recite the limitation "*the* material layer" in each of the claims. There is insufficient antecedent basis for this limitation in the claim.

Claim 10 recites the limitation "the functional structure" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.



***Claim Rejections - 35 USC § 102/103***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-5 and 11-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wu (5,078,771).

With regard to claims 1, 3-5, and 13, Wu describes a storage medium comprising a glass dielectric layer, which has an integral ion-exchanged surface layer (IIES layer) that is in the glass substrate and not laminated on top thereof (col. 27, lines 50-63). The IIES layer may be comprised of silver (col. 4, lines 22-33). The IIES layer is formed with the glass substrate by heating the silver ions solution with the glass substrate and subsequent cooling (col. 4, line 56 to col. 5, line 15).

The irradiation of the storage medium and the donor layer to create the recording layer in applicants' claim 1 is a product-by-process limitation. It has been held that "even though product-by-process claims are limited by and defined by the process,

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determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” Please see MPEP 2113 and *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The Examiner takes the position that the heating of the glass layer and the silver ion layer to create the IIES layer in Wu is equivalent to applicants' ion-exchanged layer formed by irradiation.

Alternatively, it would have been obvious to one having ordinary skill in the art of the manufacture of optical recording media to use a laser or any form of irradiation to selectively control the heating process that corresponds to the generation of the IIES (recording) layer. This would generate a boundary layer that would have the specific doping properties desired for applicants' intended use.

With regard to claims 2, 12, 14 and 18, Wu discloses forming reduced elemental silver in the form of specks or particles by application of high energy beams (col. 30, lines 3-21). Wu provide numerous methods of increasing the yield of these specks or particles at col. 30, line 22 to col. 33, line 13. These are also made with substrates of glass. He discloses that these types of layers are useful in forming DVD's, and hence they can be formed with a reflective layer so that they can be read or recorded in reflective mode (col. 33, lines 18-35).

With regard to claim 11, Wu states at col. 33, lines 33-35 that a reflective coating may be sputtered onto the IIES layer.

With regard to claim 15, Wu discloses at col. 35, lines 16-39 that the sensitive glass plates are readable using actinic/visible radiation.

With regard to claim 16, Wu discloses a variety of laser useful for recording onto the optical recording medium at col. 36, line 33 to col. 38, line 13. Included in this is a CO<sub>2</sub> laser (col. 38, lines 5-13), which applicants specifically mention in their specification (page 6, lines 4-10) as completely appropriate for using to record on their equivalent recording medium.

With regard to claim 17, Wu discloses at col. 33, line 36 to col. 34, line 43 methods for erasing the recording medium. Included among these methods is providing for the heating of the recording medium to erase the previously recorded information.

### ***Claim Rejections - 35 USC § 103***

11. Claims 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu (5,078,771) in view of Nomura et al.'s "Super-Resolution Read-Only Memory Disk with Metal Nanoparticles or Small Aperture," Jap. J. Appl. Phys. Pt. 1, vol. 41(3B) pp. 1876-1879 (March 2002).

Wu discloses or renders obvious the recording layer of applicants' claim 1; however it fails to specifically disclose or render obvious the additional specific structures and arrangements of said additional structures in applicants' claims 6-11.

Nomura et al. disclose the structure of an optical recording medium in their Figure 5.

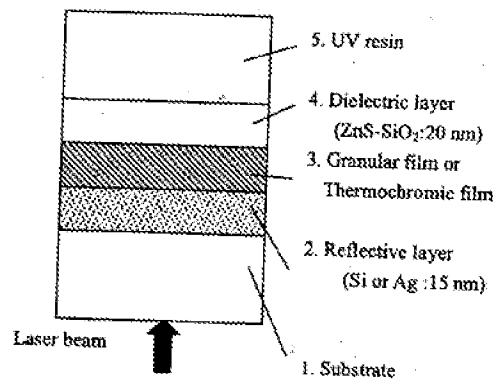


Fig. 5. Cross-sectional view of the sample disk.

Nomura et al. disclose that their granular film comprises small silver particles, wherein reflectivities are changed by increasing the silver particle size. The granular film layer **3** is analogous to applicants' storage material (ion-doped layer), the substrate **1** is analogous to applicants' material layer (Nomura et al. discloses the substrate may be polycarbonate, same as applicants), there is a reflective layer **2** arranged in between the storage material and the material layer, and there are tracks (optically functional structures) on the polycarbonate substrate (pp. 1877, col. 2).

Since Nomura et al. and Wu are both drawn to optical recording media featuring layers with dispersed metal particles therein; it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the glass substrate with the IIES layer of Wu into the disk structure Nomura et al. The results of this combination would have been predictable to one having ordinary skill in the art of CD/DVD manufacture; furthermore, each element would have performed the same in combination as they had separately. Additionally, Nomura et al. disclose using his recording medium to increase data capacity and recording density, which is extremely beneficial in the art of CD/DVD manufacture.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERARD T. HIGGINS whose telephone number is (571)270-3467. The examiner can normally be reached on M-F 7:30am-5pm est. (1st Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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